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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/718,767	11/22/2000	Tsuyonobu Hatazawa	09792909-4673	2706
26263 7590 10/24/2007 SONNENSCHN NATH & ROSENTHAL LLP P.O. BOX 061080 WACKER DRIVE STATION, SEARS TOWER CHICAGO, IL 60606-1080			EXAMINER CREPEAU, JONATHAN	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 10/24/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/718,767

Applicant(s)

HATAZAWA ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,5 and 8-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5 and 8-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/15/07 has been entered.

This Office action addresses claims 1, 4, 5, and 8-11. All the claims are newly rejected under 35 USC 112 and 35 USC 103. This action is non-final.

Applicant is further reminded that the "Remarks" section of a response must be submitted on a separate sheet, and future compliance is respectfully urged.

Claim Rejections - 35 USC § 112

2. Claims 1, 4, 5, and 8-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Applicant's remarks that "claim 1 clearly recites that the first gas absorbable member and second gas absorbable member are different elements than the gas absorbable material, which is instead part of the outer covering member" are noted and are well-taken. However, consistent with this interpretation of claim 1, it is submitted that the originally-filed application does not support the simultaneous presence of gas

absorbable members not located in a laminated layer (the “plate-shaped embodiment”) and a further gas absorbable material located in the laminated layer (the “laminated layer embodiment”). Figures 1 and 5 of the application correspond to the first and second plate-shaped gas absorbable member embodiment. Figures 7 and 8 of application correspond to the laminated layer embodiment. There is no disclosure or suggestion in the originally filed application that the plate-shaped embodiment of the invention and the laminated embodiment of the invention may be used simultaneously in the same embodiment. In particular, the following disclosure at the bottom of page 29 of the instant specification is noted: “a laminated film having a gas absorbable layer containing carbon molecular sieve having an average particle size of 3 μm shown in Fig. 8 was used *in place of* the flat-like gas absorbable member [of Example 1]” (emphasis added). As such, the combination of the “plate-shaped” embodiment with the “laminated layer” embodiment in the same embodiment is believed to constitute new matter.

Applicant is advised that given the above interpretation, the “first gas absorbable member” and “second gas absorbable member” of claim 1 do not have contain the molecular sieve or silica gel recited as being part of the “gas absorbable material” of claim 1. Further, it is not explicitly recited that the first and second gas absorbable members contain resin.

Claim Rejections - 35 USC § 103

3. Claims 1, 5, and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 895296 in view of Chaloner-Gill (U.S. Patent 5,445,856) in view of Bullock et al (U.S. Patent 5,219,676) in view of Gozdz et al (U.S. Patent 5,607,485).

Regarding claim 1, EP '296 teaches a nonaqueous electrolyte battery comprising a battery element (6) is contained in an outer covering member including a laminated film having an outermost layer and is sealed by heat seals. The laminate may be in the form of a single sheet, with the first and second covering members folded together and heat-sealed. The battery comprises an inorganic fine oxide powder such as silica which may be located between the battery element and the casing (see [0031], [0033]). It is disclosed that the inorganic oxide functions to "effectively absorb the hydrofluoric acid and others." However, it is submitted that the oxide powder, in aggregate form, would also inherently function as a "gas absorbable member" as recited in claim 1. The battery electrodes contain carbon and a lithium composite oxide (see [0027]).

The reference does not expressly teach that the oxide powder is a continuous solid member forming first and second gas absorbable members, as recited in claims 1 and 5.

However, it is submitted that the artisan would be motivated to mix the inorganic oxide powder of EP '296 with a binder material to form solid continuous gas absorbable members. In [0031], the reference teaches that the powder may be present in the space between the battery in the case, but may also be present as an electrolyte or electrode additive. The artisan would recognize from this disclosure that it would be advantageous to include a binder such as resin for

the loose powder present in the space between the case and the battery. Such a resin binder would allow the gas absorbable members to become self-supporting and would prevent migration of the powder to other parts of the battery. Accordingly, the use of resin to form gas absorbable members would be obvious to the skilled artisan.

EP '296 further does not expressly teach a winding type battery element as recited in claim 1, or that the outer laminated covering member contains a gas absorbable material comprising a molecular sieve or a silica gel mixed with a resin material, as also recited in claim 1.

Chaloner-Gill teaches a spirally-wound "jelly roll" type cell (see col. 3, line 45). As shown in Figure 1, a battery element (10) is contained in an outer covering member including a laminated film having an outermost layer and is sealed by heat seals. The outer covering member may be defined as the laminate including layers 64, 66, 68, 70, and 72 (see Fig. 5), and each outer covering member has a recess therein (see Figs. 3 and 4). The battery comprises a gas absorbing material which is mixed with a resin material and formed as a layer (62) between the "outer covering member" as defined above and the battery element (see col. 2, line 61; col. 6, line 33). In the preferred embodiments, combined thickness of the seven layers (60-72) is less than about 500 microns or less than about 250 microns (see col. 9, line 39). In the case of the latter, the thickness of each layer is preferably 20-30 microns (see col. 9, line 42). The gas absorbing material may comprise an activated carbon material (see col. 8, line 13) or silica gel (see col. 9, line 11).

It is submitted that the artisan would be motivated to use the laminated outer covering member of Chaloner-Gill, which includes the silica gel gas absorbable material, in the battery of EP '296. In column 1, line 49, Chaloner-Gill discloses that "[a] laminate is provided for use as a protective covering for inhibiting penetration of oxygen and/or oxygen and water therethrough and is particularly suitable for protecting components of an electrochemical cell such as a lithium battery." Accordingly, the artisan would be motivated to use the laminated outer covering member of Chaloner-Gill, which includes the silica gel gas absorbable material, in the battery of EP '296.

Further, the use of a spirally-wound battery element as disclosed by Chaloner-Gill in the battery of EP '296 would be obvious to the skilled artisan. It is known that the use of a wound configuration allows the current density of the battery to be increased. As such, the use of a wound battery element in the battery of EP '296 would be rendered obvious.

Chaloner-Gill does not expressly teach that the gas absorbable material is present in an amount of 0.1 to 95 wt. percent on a basis of a weight of the resin material, or that the layer containing the gas absorbable material has a thickness of between 1-500 microns, as recited in claim 1.

However, the artisan would be motivated to use a suitable amount of gas absorbing material based on the size of the battery and/or electrode element, thereby rendering the claimed range obvious. It has been held that the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Boesch*, 205 USPQ 215

(CCPA 1980). In this case, it is known that an amount of gas absorbing material can be selected based upon the size of the battery, as shown by column 6, lines 26-35 of Bullock et al.:

The amount of the gel will vary from battery size to battery size within the guidelines of being a sufficient quantity to absorb all water vapor produced during the self-discharge reactions. For normal 12V automobile batteries having six cells, the amount could range between about 50 grams to 300 grams. One skilled in the art could readily select a desiccant quantity by knowing the battery size, plate construction and volume of electrolyte left in the battery after the dumping step.

Although Bullock relates to lead-acid batteries, its teachings regarding the battery size would be applicable to all batteries employing a gas absorbing agent. Accordingly, the artisan would be motivated to use a suitable amount of gas absorbing material in the battery of Chaloner-Gill, thereby rendering the range of claim 1 obvious.

Additionally, the thickness range recited in claim 1 is not considered to distinguish over the references. Claim 1 recites that the members have a thickness of between 1-500 microns. As noted above, Chaloner-Gill teaches that in a seven-layer construction, each sheet preferably has a thickness of less than about 500 microns (or less than about 250 microns). In the case of 500 microns, each sheet would have a thickness of about 70 microns. As such, this disclosure fairly suggests the claimed range of 1-500 microns.

EP '296 further does not expressly teach that the electrolyte is a gel electrolyte comprising vinylidene fluoride-hexafluoropropylene (PVDF:HFP) copolymer as recited in claim 1.

The patent of Gozdz et al is directed to a lithium secondary battery. The battery may contain a gel electrolyte containing a PVDF:HFP copolymer and 20-70 wt% of a plasticizer containing an electrolytic salt (see abstract).

Art Unit: 1795

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Gozdz et al. provides the artisan sufficient motivation to use these materials in the battery of EP '296. In column 2, line 30, Gozdz et al. teach the following:

The present invention provides a means for avoiding the disadvantages of prior electrolytic cell compositions and constructions by enabling the ready and economical preparation of strong, flexible polymeric electrolytic cell membranes which will readily retain electrolyte salt solutions and remain functional over a range extending well below room temperature.

As such, the artisan would be motivated to use the electrolyte of Gozdz in the battery of EP '296.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '296 in view of Chaloner Gill in view of Bullock in view of Gozdz et al. as applied to claims 1, 5, and 8-11 above, and further in view of Wedlake (U.S. Patent 4,269,905).

Neither EP '296 nor Chaloner-Gill expressly discloses that the battery contains a carbon molecular sieve, as recited in claim 4.

Wedlake is directed to electrochemical cells having a casing containing a layer of molecular sieve material. The molecular sieve may comprise materials such as zeolite and carbon (col. 3, line 59 et seq.).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the carbon molecular sieve of Wedlake as the gas absorbable material of EP '296/Chaloner-Gill. In the abstract, Wedlake discloses that "this invention involves associating a micromolecular sieve carrier with the cell to sorb such contents when they escape, to reduce the severity of undesired reactions of such contents." As such, the artisan would be motivated to use the materials disclosed by Wedlake, such as carbon molecular sieve, as the gas absorbable material of EP '296/Chaloner-Gill in hopes of obtaining these advantages.

Response to Arguments

5. Applicant's arguments filed October 15, 2007 have been fully considered but they are not persuasive insofar as they apply to the present rejections. Applicants state that "*Nakane's* fine powder fails to teach or suggest Applicants' claimed first and second gas absorbable members." However, this argument does not substantively address the reasons provided in the rejection that the skilled artisan would be motivated to use a resin binder to form solid continuous gas absorbable members. Thus, the stated basis of the rejection is still believed to be proper, and is maintained herein.

Art Unit: 1795

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299.

The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Primary Examiner
Art Unit 1795
October 22, 2007